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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 2002-0893 / 24061.22

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on December 16, 2008

Signature Bonnie Boyle

Typed or printed name Bonnie Boyle

Application Number	Filed
10/668702	9/23/2003

First Named Inventor: Lin et al.

Art Unit	Examiner
2811	Gebremariam, S

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- ☐ applicant/inventor.
- ☐ assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
- ☑ attorney or agent of record. Registration number 62,332
- ☐ attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____

Kelly Gehrke Lyle
Signature

Kelly Gehrke Lyle
Typed or printed name

512-867-8528
Telephone number

December 16, 2008
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

☐ *Total of one forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Lin et al.	§	Attorney Docket No. 24061.22 (TSMC 2002-0893)
Serial No.: 10/668,702	§	Customer No. 42717
Filed: September 23, 2003	§	Group Art Unit: 2811
For: METHOD FOR IMPROVING TIME DEPENDENT DIELECTRIC BREAKDOWN LIFETIMES	§	Examiner: Gebremariam, S

REASONS IN SUPPORT OF PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Please consider the following reasons in support of the concurrently filed Pre-Appeal Brief Request for Review.

Reasons

I. Applicants submit that there is clear error with respect to the Examiner's rejection of dependent claims 26 and 27 under 35 U.S.C. § 103. The Examiner rejects claims 26-27 over U.S. Application No. 2002/0192937 by Ting et al. ("Ting), U.S. Patent No. 5,962,344 to Tu et al ("Tu"), and U.S. Application No. 2004/0266123 by Cui et al ("Cui"). See Final Office action dated 9/16/2008 at pg. 11. The Applicants respectfully disagree that Cui is available prior art to the Applicant's disclosure.

The Application at issue (10/668,702) was filed Sept. 23, 2003. Cui was filed April 13, 2004. The Examiner relies on paragraph [0010] of the Cui application (with a filing date of April 13, 2004) as support for his rejection. See Final Office action at pg. 11. Therefore, the rejection is in clear error.

Cui purports to claim priority to a continuation-in-part application and a provisional to that

CIP application. The Examiner states "Cui teaches an electron beam treatment of silicon nitride film to improve the quality of the film ([0010])." Final office action at pg. 11. There is no indication, by the Examiner of where an electron beam treatment of a silicon nitride film may be found in applications from which Cui claims priority. Furthermore, the Applicants in review of these previously filed documents (i.e., the CIP or provisional of the CIP) have found no indication of the disclosure relied upon by the Examiner. Therefore, the rejection is in clear error and should be withdrawn.

II. Applicants submit there is clear error with reference to the rejections of independent claims 12, 21, and 25, and the claims that depend therefrom. In the Final Office Action dated September 9, 2008, the Examiner rejected claims 12-17 under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. U.S. 6,472,306 ("Lee") in view of Tu et al. U.S. 5,962,344 ("Tu"); claims 21 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Ting in view of Tu. The Applicants presume, for purposes of this appeal, that the Examiner intended to reject independent claim 25 as unpatentable over Ting and Tu as well, though no such indication is specifically provided in the Final Office Action dated September 9, 2008. The Applicants submit that these rejections are in clear error and should be withdrawn.

Claims 12, 21, and 25 all include limitations directed to treatment processes. For example, claim 12 includes:

> "selecting at least one of a plasma treatment process and an electron beam treatment process; applying the selected treatment process to affect the upper and lower surfaces of the glue layer....wherein the treatment process enhances an adhesiveness between the dielectric layer and the second metal layer."

The Examiner admits that Lee and Ting do not provide for the treatment processes (*e.g.*, plasma or electron beam). *See* Final Office dated Sept 16, 2008 at pgs. 6, 9, and 10 for each respective rejection. Instead, the Examiner asserts that the treatment process is provided by Tu. The Applicants disagree that Tu provides an applicable disclosure.

A. Tu's disclosure

The Examiner states that Tu teaches "a plasma treatment process (fig. 5) where applying the selected treatment process to affect the upper and lower surfaces of the silicon nitride layer (24,

col. 5, lines 30-44)." Final Office action dated Sept. 16, 2008 at pgs. 6, 9, and 10. Fig. 5 of Tu is reproduced below. Layer 24, cited by the Examiner as disclosing the claimed a layer on which a treatment is performed, is disclosed by Tu as a "**passivation layer 24**." Col. 5, ln. 36.

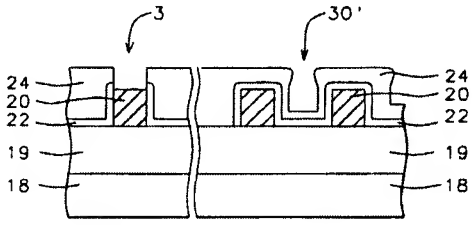

FIG. 5

The Examiner also cites to a passage of Tu (col. 5, lns. 30-44). As is clear for inspection of the passage, the plasma treatment step is performed for various silicon nitride thicknesses in order to affect the "percentage of pinhole failures." Col. 5, lns. 33-34.

One of ordinary skill in the art would clearly recognize that Tu's disclosure of pinhole failures and the described test of submersion of a substrate into KOH solution to detect a change in underlying metal lines (col. 5, lns. 30-44), are directed to passivation layer quality, such as passivation layer 25 of figure 5. In fact, the Tu disclosure is directed to "improved passivation layers on semiconductor metal interconnections." *See* Title. Tu does also state that though it is typically addressed to passivation "the method is generally applicable where a Si_3N_4 layer over **closely spaced metal lines** is required." Col. 2, lns. 60-62, emphasis added. See Tu's Fig. 1 for Tu's disclosure of the issues with a topography provided by closely spaced, high aspect ratio, metal lines. Also provided by "closely-spaced inter-connecting metal lines 20" of Fig. 5. Col. 1, lns. 49-50.

B. Obviousness Law

In *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007), the Court stated that "a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way

the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *Id.* at 1741 (emphasis added).

The Examiner has not shown how the elements being combined are performing their known or established function. In *KSR Int'l. Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007), the Court teaches that when combining elements from different references, it is important to determine whether the element is performing "the same function it had been known to perform." It is clear that the plasma treatment of Tu should not be combined with the device of Lee or Ting because the known function of plasma treatment is changed. **The Examiner has also not shown how the elements being combined produce a predictable result.** MPEP 2143.01 (III) states that the "mere fact that references can be combined does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art." In the present case, the Examiner has not expressed any reason why combine the treatment of Tu with the structure of Lee or Ting in the way the claimed would present a predictable result.

C. Non-Obviousness of Claims 12, 21, and 25

Applicants first argue that a passivation layer (e.g., Tu's passivation layer 24) does not provide a glue layer. Therefore from a disclosure of a process performed a passivation layer, it does not follow that a reason, or a predictable result, is provided for performing even the same process on a glue layer.

The Examiner asserts Lee's disclosure of a sealing layer 104 provides the claimed glue layer. Even assuming arguendo this to be true, there is no reason to combine the treatment of Tu on the sealing layer 104. The sealing layer 104 is not a passivation layer and it is planar. See Fig. 9 below. Nor would a predictable result be produced.

Similarly, the Examiner cites to Figs. 1-12 of Ting as providing the claimed structure including that silicon nitride layer 3 provides for the claimed glue layer. Even assuming arguendo this to be true, there is no reason to combine the treatment of Tu with the structure of Ting, nor would a predictable result be provided. As indicated by Fig. 12 of Ting below, the silicon nitride layer 3 is not a passivation layer and it is a planar layer.

FIC. 9

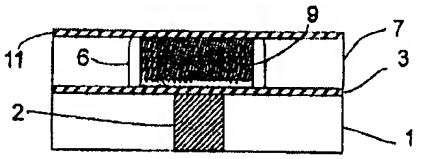

Fig. 12

Further still, the Examiner is obligated to look the claim as a whole, not merely is a treatment provided, but a treatment on a specific layer of a structure, and for a specific purpose "improved adhesion" between two layers through treatment of a glue layer. Improved adhesion is not a predictable result of using a process disclosed to reduce pinholes in a passivation layer.

Conclusion

It is respectfully submitted that at least claims 12-17, 21, and 24-27 in the application are in condition for allowance.

Respectfully submitted,

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Dated: Dec 16, 08

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Certificate of Service

I hereby certify that this correspondence is being filed with the U.S. Patent and Trademark Office via EFS-Web on

December 16, 2008

Bonnie Boyle

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